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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/777,504	02/05/2001	Gregory Robert Roelofs	US010024	8342

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U.S. Philips Corporation
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EXAMINER	
ROSALES HANNER, MORELLA I	
ART UNIT	**PAPER NUMBER**
2128	

DATE MAILED: 09/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/777,504	ROELOFS, GREGORY ROBERT	
	Examiner	Art Unit	
	Morella I Rosales-Hanner	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 February 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

1. **Claims 1 – 20** have been examined and are pending.

Information Disclosure Statement

2. The office acknowledges receive of the information disclosure statement (IDS) submitted on October 23, 2002. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has being considered by the examiner.

Specification

3. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code [**page 3, line 9**]. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4.1 **Claims 1 – 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over a printed publication by **David Anderson et al.** entitled "**Tangible Interaction + Graphical Interpretation: A New Approach to 3D Modeling**", hereafter referred to as *Anderson* in view of **U.S Patent No. 5,013,6,262,711 to Cohen et al**., hereafter referred to as *Cohen*.

4.1.1 As regards to **claims 1**, *Anderson* teaches [**Pg 393, Section 2 Computational Building Blocks**] a system for creating a virtual model, to be displayed on a computer driven display, of a physical structure comprising:

- at least one sensor providing sensor data [**Pg 395, Section 2.1 System Description, last paragraph**];
- at least one component capable of being sensed by the sensor [**Pg 395, Section 2.1 System Description, first paragraph**];
- a computer interface for coupling the sensor to a computer, the computer determining the position and dimensions of each component based on the sensor data, and the computer creating a virtual model to be displayed on a

computer display of a structure representative of an arrangement of the components [**Pg 395, Section 2.2 Geometry determination, paragraphs 5 & 6**].

Anderson also teaches [**Pg 395, section 2.2 Geometry determination, paragraph 5**] a special block [component] that supplies power to the blocks, provides an interface between a block structure and a host computer and may be attached to any part of the block structure. *Anderson* further teaches [**Pg 401, section 4 Conclusions and future work, paragraph 3**] that to make a truly useful and affordable system more investigation is required and that current work and plans include reducing the power requirements (and thereby the cost) of the blocks by looking at ways of capturing a block structure using only a bare minimum of active components in each block.

Anderson does not expressly teach a baseboard upon which components are mounted.

Cohen teaches [**Col 6, lines 16 – 46**] a detection field, which is equivalent to Applicant baseboard, that can detect (sense) the position of interactors in “x” and “y” coordinates, it is provided with channels which permit interactors (components) to be engaged (mounted) with the detection field, and it is coupled to a computer system via an interface. *Cohen* also teaches [**Col 2, lines 49 – 52**] that detection field is suitably sized and configured so that multiple users can be engaged simultaneously.

It would have been obvious to one of ordinary skills in the art, at the time of the invention, to modify the system for creating a virtual model and make it more useful and affordable system by reducing the power requirements (and thereby the cost) of the blocks (components) and looking at ways of capturing a block structure

using only a bare minimum of active components in each block, as taught by *Anderson*, by using an apparatus that can detect (sense) the position of multiple blocks (components) simultaneously and that is suitably sized and configured to engage multiple users simultaneously as taught by *Cohen*.

4.1.2 As regards to **claims 2 and 3**, *Anderson* teaches **[section 2.1, System description]** blocks (components) comprising a non conductive material capable of being sensed by the sensor and at least one projecting electrical contact point formed of a conductive material and wherein the sensor comprises a circuit board providing an array of electrical contact holes at predetermined positions, and includes an identification label capable of being sensed by the sensor; wherein the sensor data comprises identification data sensed from the identification label and location and orientation data for each component sensed; and wherein the sensor data is stored by one of the computer and the sensor **[Section 2.2 Geometry determination]**.

4.1.3 As regards to **claim 4**, *Anderson* teaches **[Section 2.2 Geometry determination]** storing property data, representative of the dimensions and shape, associated with the identification data for each block (component).

4.1.4 As regards to **claim 5**, *Anderson* teaches **[Section 2.2 Geometry determination]** identification label of each block (component) comprising an electronic signature; and

the sensor is a circuit board capable of sensing the position of each sensed (mounted) component and its electronic signature.

4.1.5 As regards to **claim 6**, *Anderson* teaches **[Section 2.2 Geometry determination, 4th paragraph]** an identification label for each block (component) wherein the sensor is a circuit capable of reading the position and ID of each connected (mounted) block.

Anderson does not expressly teach an identification label comprising a magnetic signature

Cohen teaches **[Col 6, Line 58 – Col 7, line 8]** an identification label for each interactor (component) comprises a magnetic signature; and wherein the sensor comprises a magnetic sensing board capable of reading the position and magnetic signature of each mounted component. *Cohen* also teaches **[Col 7, Lines 5 – 8]** that magnets not only hold the interactor (components) in position, they also ensure good contact with the surfaces of the interactor.

It would have been obvious to one of ordinary skills in the art, at the time of the invention, to implement the identification label taught by *Anderson* as a magnetic signature in order to hold the blocks in position and to ensure good contact with the surfaces of the interactor (component) as taught by *Cohen*.

4.1.6 As regards to **claim 7**, ,*Anderson* teaches **[Section 2.2 Geometry determination]** sensors on the top detection field of a drain block with the circuit board covered with a nonconductive covering having an array of holes placed at

predetermined positions for exposing an array of electrical contact points on the circuit board.

4.1.8 As regards to **claim 8**, *Anderson* teaches [**Section 2.1 System description**] sensors connected to a power source and accesses a voltmeter for testing for a positive voltage, an ammeter for determining current at contact points having a positive voltage, a switching network and a processor receiving data from the voltmeter and for controlling the voltmeter, ammeter and the switching network.

4.1.9 As regards to **claim 9**, *Anderson* teaches [**Section 2.1 System description**] blocks (components) with two associated electrical contact points, and wherein each electrical contact point of each block (component) comprises a plurality of conductors wherein each of the conductors in one of the electrical contact points is in one to one paired correspondence with one conductor in the associated contact point; wherein each electrical contact hole on the circuit board has a plurality of conductors; and wherein electrical contact between a contact point of a sensed (mounted) block (component) and a contact hole of the circuit board comprises one to one electrical contact between the plurality of conductors in the contact point of the sensed (mounted) block (component) and the plurality of conductors in the contacted contact, hole of the circuit board.

4.1.10 As regards to **claim 10**, *Anderson* teaches [**Section 2.2 Geometry determination**] sensor data comprises the location of contact points on the circuit board having electrical contact with associated contact points of sensed (mounted) blocks (components) and current values read by the ammeter for associated contact points.

4.1.11 As regards to **claim 11**, *Anderson* teaches [**Section 2.1 System description**] paired conductors in each block (component) that are independently electrically connected, each electrical connection comprising at least one resistor selected from a predetermined group of possible resistors; and wherein an identification label of each block (component) is comprised of the selected resistance.

4.1.12 As regards to **claim 12**, *Anderson* teaches [**Section 2.1 System description**] blocks (components) comprising two electrical contacts, each electrical contact comprises three conductors, and each electrical connection between paired conductors comprises one resistor.

4.1.13 As regards to **claims 13 and 15**, *Anderson* teaches [**Section 2.2 Geometry determination**] determining the orientation of each block (component) by determining which of the associated contact points of the block (component) is pulling its top signal line low.

Anderson does not expressly teach using a diode as part of one of the electrical connections in a component.

Cohen teaches **[Fig 5a and corresponding text]** use of a diode as part of an interactor (component) coupled to the contact line to prevent false keying, which is well known to those skilled in the art of keyboard design.

It would have been obvious to one of ordinary skills in the art, at the time of the invention, to modify the block (component) taught by *Anderson* to include a diode coupled to the contact line to prevent false keying as taught by *Cohen.*

4.1.14 As regards to **claim 14**, *Anderson* teaches **[Section 2.1 System description]** a block (component) formed of a nonconductive material, comprising:
a pair of associated electrical contact points; each contact point having a plurality of conductors; each conductor independently connected in one to one correspondence to an associated conductor in the associated contact point with each connection including a resistor selected from a predetermined group of possible resistors; and wherein an electronic signature for identifying the block (component) is comprised of a combination of the resistors of the plurality of the connections of the associated conductors of the block (component).

Anderson further teaches **[Pg 401, section 4 Conclusions and future work, paragraph 3]** that to make a truly useful and affordable system more investigation is required and that current work and plans include reducing the power requirements (and thereby the cost) of the blocks by looking at ways of capturing a block structure using only a bare minimum of active components in each block.

Anderson does not expressly teach a baseboard upon which components are mounted.

Cohen teaches [**Col 6, lines 16 – 46**] a detection field, which is equivalent to Applicant baseboard, that can detect (sense) the position of interactors in "x" and "y" coordinates, it is provided with channels which permit interactors (components) to be engaged (mounted) with the detection field, and it is coupled to a computer system via an interface. *Cohen* also teaches [**Col 2, lines 49 – 52**] that detection field is suitably sized and configured so that multiple users can be engaged simultaneously.

It would have been obvious to one of ordinary skills in the art, at the time of the invention, to modify the system for creating a virtual model and make it more useful and affordable system by reducing the power requirements (and thereby the cost) of the blocks (components) and looking at ways of capturing a block structure using only a bare minimum of active components in each block, as taught by *Anderson*, by using an apparatus that can detect (sense) the position of multiple blocks (components) simultaneously and that is suitably sized and configured to engage multiple users simultaneously as taught by *Cohen.*

4.1.16 As regards to **claim 16,** *Anderson* teaches [**Section 2.2 Geometry determination**] a software application receiving sensor data for at least one block (component), comprising computer program code; wherein the sensor data comprises data representative of an identity, orientation and a location for each block (component) sensed (mounted); wherein the computer code processes the sensor data for

determining the identity, position and orientation of each block (component) sensed; wherein the computer code accesses property data including data representative of the dimensions and shape of each block (component) available for sensing, for determining the dimensions and shape of each block (component) sensed in accordance with the identity of each block; the computer code creating a virtual image representative of an arrangement of the blocks (components) sensed (mounted) on the drain block based on the shape, dimensions, orientation and location of each block (component) sensed (mounted) by the drain block.

Anderson does not expressly teach a baseboard upon which components are mounted.

Cohen teaches **[Col 6, lines 16 – 46]** a detection field, which is equivalent to Applicant baseboard, that can detect (sense) the position of interactors in "x" and "y" coordinates, it is provided with channels which permit interactors (components) to be engaged (mounted) with the detection field, and it is coupled to a computer system via an interface. *Cohen* also teaches **[Col 2, lines 49 – 52]** that detection field is suitably sized and configured so that multiple users can be engaged simultaneously.

It would have been obvious to one of ordinary skills in the art, at the time of the invention, to modify the system for creating a virtual model and make it more useful and affordable system by reducing the power requirements (and thereby the cost) of the blocks (components) and looking at ways of capturing a block structure using only a bare minimum of active components in each block, as taught by *Anderson*, by using an apparatus that can detect (sense) the position of multiple blocks

(components) simultaneously and that is suitably sized and configured to engage multiple users simultaneously as taught by *Cohen.*

4.1.17 As regards to **claim 17,** *Anderson* teaches **[Section 2.1 System specification]** a drain block that comprises a circuit board; wherein the sensor data comprises data indicative of current values and associated resistance associated with each contact point of a grid of contact points on the circuit board; wherein the identity is determined according to the resistance associated with each interactor (component) mounted on the circuit board.

4.1.18 As regards to **claim 18,** *Anderson* teaches **[Section 2.2 Geometry determination]** a sensor for sensing the identity, location and orientation of blocks (components) sensed by a drain block comprising;

a circuit board, mounted on the drain block, having a grid of contact points, each contact point having a plurality of conductors; wherein the sensor is connected to a power source and accesses a voltmeter, an ammeter and a switching network; and wherein the sensor further accesses a processor for receiving data from the voltmeter and for controlling the voltmeter, ammeter and the switching network.

Anderson does not expressly teach a baseboard upon which components are mounted.

Cohen teaches **[Col 6, lines 16 – 46]** a detection field, which is equivalent to Applicant baseboard, that can detect (sense) the position of interactors in “x” and “y”

coordinates, it is provided with channels which permit interactors (components) to be engaged (mounted) with the detection field, and it is coupled to a computer system via an interface. *Cohen* also teaches **[Col 2, lines 49 – 52]** that detection field is suitably sized and configured so that multiple users can be engaged simultaneously.

It would have been obvious to one of ordinary skills in the art, at the time of the invention, to modify the system for creating a virtual model and make it more useful and affordable system by reducing the power requirements (and thereby the cost) of the blocks (components) and looking at ways of capturing a block structure using only a bare minimum of active components in each block, as taught by *Anderson*, by using an apparatus that can detect (sense) the position of multiple blocks (components) simultaneously and that is suitably sized and configured to engage multiple users simultaneously as taught by *Cohen.*

4.1.19 As regards to **claim 19**, *Anderson* teaches **[Section 2.2 Geometry determination]** a method for creating a virtual model, to be displayed on a computer driven display, representative of at least one block (component) mounted on a drain block,

wherein each block mounted on the drain block makes electrical contact with an electrical circuit board formed on the baseboard and wherein the circuit board has an array of contact points, each contact point having a predetermined location on the circuit board; comprising the steps of:

- successively applying a high impedance voltage to each contact point for testing each contact point of the array of contact points, for determining the presence and location of a block in electrical contact with the contact point being tested **[Section 2.2 Geometry determination]**;
- measuring the voltage for contact points on the circuit board within a predetermined radius of the contact point being tested **[Section 2.2 Geometry determination]**;
- determining that a block is in electrical contact with the test contact point and an associated contact point having a nonzero measured voltage, at the locations of the contact point being tested and the associated contact point, wherein the location of the contact point being tested and the associated contact point is location data for the block determined to be in electrical contact **[Section 2.2 Geometry determination]**;
- applying a low impedance voltage to the contact point being tested when determined to be in electrical contact with a mounted block **[Section 2.2 Geometry determination]**;
- sensing the current values for the contact point being tested and its associated contact point indicative of an identification of the block determined to be in contact with the contact point being tested and its associated contact point, wherein the identification of the block is identification data **[Section 2.2 Geometry determination]**;

- creating a virtual model representative of an arrangement of the blocks when connected to the drain block according to a structure composed of each of the block based on the location data, identification data and property data for each block **[Section 2.2 Geometry determination]**.

- consulting a database of block identifications storing property data comprising dimension data for each block identification; and

Anderson further teaches **[Pg 401, section 4 Conclusions and future work, paragraph 3]** that to make a truly useful and affordable system more investigation is required and that current work and plans include reducing the power requirements (and thereby the cost) of the blocks by looking at ways of capturing a block structure using only a bare minimum of active components in each block.

Anderson does not expressly teach a baseboard upon which components are mounted or consulting a database of block identifications storing data comprising dimension data for each block identification.

Cohen teaches **[Col 6, lines 16 – 46]** a detection field, which is equivalent to Applicant baseboard, that can detect (sense) the position of interactors in "x" and "y" coordinates, it is provided with channels which permit interactors (components) to be engaged (mounted) with the detection field, and it is coupled to a computer system via an interface. *Cohen* also teaches **[Col 2, lines 49 – 52]** that detection field is suitably sized and configured so that multiple users can be engaged simultaneously. *Cohen* further teaches **[Fig 16, step 294 and corresponding text]** consulting a database of interactor

identifications storing property data comprising dimension data for each interactor identification as part of detecting privacy violation.

It would have been obvious to one of ordinary skills in the art, at the time of the invention, to modify the system for creating a virtual model and make it more useful and affordable system by reducing the power requirements (and thereby the cost) of the blocks (components) and looking at ways of capturing a block structure using only a bare minimum of active components in each block, as taught by *Anderson*, by using an apparatus that can detect (sense) the position of multiple blocks (components) simultaneously and that is suitably sized and configured to engage multiple users simultaneously as taught by *Cohen* and to consult a database of interactor (component) identification to detect privacy violation as also taught by *Cohen.*

4.1.20 As regards to **claim 20**, *Anderson* teaches **[Section 2.2 Geometry determination]** creating a virtual model representative of an arrangement of the blocks when connected to the drain block according to a structure composed of each of the block based on the location data, identification data and property data for each block using a straightforward recursive procedure.

Additional references

5. The following is a list of references that are relevant to the claimed invention but were not cited by the examiner:

- Matthias Rauterberg, Morten Fjeld, Helmut Krueger, Martin Bichsel, Uwe Leonhardt, Markus Meier ; "BUILD-IT: a planning tool for construction and design"; April 1998; CHI 98 conference summary on Human factors in computing systems
- David Anderson, James L. Frankel, Joe Marks, Darren Leigh, Eddie Sullivan, Jonathan Yedidia, Kathy Ryall; "Building virtual structures with physical blocks"; Nov 1999; Proceedings of the 12th annual ACM symposium on User interface software and technology
- George W. Fitzmaurice, Hiroshi Ishii, and William Buxton; "Bricks:Laying the Foundations for graspable User Interfaces", CHI '95 Proceedings
- Matthew G. Gorbet, Maggie Orth, Hiroshi Ishii; "Triangles: tangible interface for manipulation and exploration of digital information topography"; Jan 1998; Proceedings of the SIGCHI conference on Human factors in computing systems
- Brygg Ullmer, Hiroshi Ishii, Dylan Glas; "mediaBlocks: physical containers, transports, and controls for online media";July 1998; Proceedings of the 25th annual conference on Computer graphics and interactive techniques

6. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Morella Rosales-Hanner whose telephone number is

(703) 305-8883. The examiner can normally be reached Monday-Friday from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean Homere can be reached on 703 308-6647. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

MRH

~~Aug 24th, 2004~~

JEAN R. HOMERE
PRIMARY EXAMINER

9/7/04